Dental Sealants Part 2: Who should get dental sealants and when

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ABSTRACT

Despite the remarkable achievements in recent decades in oral prevention, sealants are still underused even if their efficacy is well documented and clinical practice guidelines are available in almost every developed country.
The clinician should know who needs dental sealants and when, with particular focus on high risk patients and pre-school children.

Keywords *Dental sealants; High-risk caries; Primary oral health care.*

"An ounce of prevention is better than a pound of cure": Prevention rather than cure is the best way to keep a patient healthy.

Despite the above, sealants are still underused even if their efficacy is well documented and clinical practice guidelines are available in almost every developed country [AAPD, 2016; Ferrazzano et al., 2016].

According to the literature, pits and fissures are eight times more susceptible to caries than smooth surfaces. Specifically, decays occurring in pits and fissures account for 80% to 90% of the total caries status in permanent teeth and for around 44% in primary teeth [Athira S et al., 2017]. Moreover, during the eruption of the first molar, plaque accumulation and caries susceptibility are greater than ever, hence this is the right time to start preventing.

What is the best time to seal?

As far as permanent teeth, sealing the first and the second molars as soon as they erupt can keep them cavity-free from the start. In addition, in newly erupted teeth the enamel is not completely formed and therefore they have a high caries susceptibility.

Pit and fissure sealants provide 100% caries prevention on the occlusal surface as long as the sealant is retained on the tooth surface. Retention rate is about 85%-100% during the first years and drops to about 50% after only five years; therefore it is recommended to replace sealants after 5 years.

In the case of teeth affected by molar-incisor hypomineralization (MIH), fissure sealants may be useful before breakdown occurs, especially when teeth are fully erupted and when moisture control is adequate. Regular checkups are paramount.

Lastly, from a secondary prevention perspective, when a non-cavitated carious lesion is already present, sealants can be used to inhibit its progression thus decreasing the number of viable bacteria [Wright et al., 2016]. Hence, the Bodecker's concept "when in doubt seal" rather than "when in doubt fill".

Who should receive sealant treatment?

Even if children are notoriously bad brushers and they generally struggle to clean up the back of their mouths, the Cochrane Systematic Review highlights that the effectiveness of sealants is obvious for children with high caries risk, however the benefits of sealing teeth with lower caries risk is debated [Ahovuo-Saloranta A et al., 2013].

Guidelines for promoting good oral health, which have been drawn up by the Italian Society of Paediatric Dentistry (SIOI), recommend applying sealants (and fluoride varnishes, gel and mouthwash) only to high-risk patients over 7 years of age [SIOI, 2013]. This means that children are not all the same and – as the AAPD suggests – it is necessary to quantify the individual caries risk, targeting prevention strategies based on patient's risk.

However, "assessing the risk of developing oral disease is not a perfect science" [Clarkson et al. 2009] and caries risk may change over time. Therefore, dentists should monitor their patients and identify cavities early enough to treat them as conservatively as possible, often with sealants.

The Guideline of the Italian Ministry of Health for oral health promotion in children provides clinical protocols for caries risk assessment [2013].

The individual risk of developing carious lesions must be assessed through the experience of caries, eating habits and oral hygiene, fluoride prophylaxis and the general health status of each individual, as well as through the socio-economic background of the family (Strength of recommendations A; Quality of evidence I).

Furthermore, it should be underscored that patients who wear an intraoral appliance are considered moderately at risk of developing caries [AAPD, 2013] and, for this reason, dental sealants are suggested.

In conclusion, sealants do not replace the other preventive interventions, such as daily brushing and healthy diet, but they are part of a comprehensive prevention programme and their use should be encouraged, especially in patients at high-risk of developing caries.

Do primary molars need dental sealants?

All paeditric dentists know the importance of healthy primary molars: they help children chew food, serve as placeholders before permanent teeth erupt and prevent orthodontic problems. Moreover, tooth decay on primary teeth is one of the strongest predictors of tooth decay in the permanent dentition [Skeie MS et al., 2006].

The current evidence supporting sealants in primary teeth is not strong; studies are scarce and, in some cases, information is obtained by literature on permanent teeth sealants. The American Academy of Pediatric Dentistry recommends dental sealants as part of a comprehensive caries prevention plan for children over 3 years of age. Nevertheless, it is true that there is a significantly lower presence of pit-and-fissure caries in primary teeth than in permanent teeth (44% vs. 90%) [Dye BA et al., 2007], limiting sealants' preventive benefits. Additionally, sealants' low utilisation has also been attributed to concerns regarding differences in the anatomy of occlusal surfaces of primary molars.

To conclude, it is important to assess sealants' costs-benefits for each child, especially for high-risk patients; indeed, for the first time in 40 years, caries prevalence has increased in 2-to-5 years children, highlighting the need for improved preventive strategies in this age group [Casamassimo PS et al., 2009].

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